Solar Generation: Bright Spots and Cloudy Issues

Rick Bowker, MLGW
Utility Technology Association
October 19, 2017
Solar Generation Options: Then and Now

* A Decade Ago
  * TVA Generation Partners (pilot)
  * TVA Dispersed Power Production (PURPA requirement; <10 participants Valley-wide)

* Today
  * TVA Green Power Providers
  * TVA Dispersed Power Production
  * Self-Generation (behind-the-meter)
  * TVA Distributed Solar Solutions
  * Other

Solar represents 100% of the “distributed generation” projects in Shelby County, so we use the terms interchangeably here.
Distributed Generation in Shelby Co
(Generation Capacity in MW)

Green Power Providers (84 projects completed), 3.6
Self Generation (4 projects completed), 1.6
Renewable Standard Offer (4 projects completed; closed), 0.6
Distributed Solar Solutions (1 project underway), 2
Other, 69.5
(2 projects)
* 68.5 MW at Navy base, underway
* 1 MW at TVA Allen site, completed
Shelby Farms Park Conservancy
Solar-Assisted EV Charging Station

* 20 kW solar array serves as canopy for 10-space EV Charging Station
* EPRI/TVA/MLGW project installed in 2012 to monitor charging habits to study EV impact on electric system
* Shelby Farms Park
  * Provides free charging to EV drivers
  * Sells solar output to TVA through Green Power Providers (27,512 kWh in 2014, then offline for park construction; resumed generation in May 2017)
* Buys 14 Green Power Switch blocks to claim “solar assisted”
Tennessee Solar Environment

* TVA sales are flat; no need for new generation
* Net Metering is not allowed
  * Local Power Companies (LPCs) have all-requirements contracts with TVA, thereby preventing LPCs from owning generation or buying power from others
* LPCs partner with TVA to offer customer options
* LPCs want to discourage behind-the-meter installations, which reduce revenue and shift fixed costs embedded in the energy portion of electric rate to other customers
* Third-party ownership may be feasible
  * LPCs are only entities allowed to sell power to end-users (outside of TVA direct-served customers)
  * Acceptable if contract is structured so end-user is leasing a system or leasing land to system owner—as long as customer is not buying kWh output from system owner
Tennessee Solar Environment

* Customers like solar
  * Household/community interest grows
  * Businesses are making public commitments for renewable energy
    * TheRE100.org
    * Renewable Energy Buyers Alliance (REBA)
    * RMI Business Renewables Center
  * Buzzword is “additionality” (i.e., new construction)

* Customers who like solar have higher utility satisfaction and engagement
  * Customers who feel their utility supports solar energy are twice as likely to give their electric provider an excellent customer satisfaction rating (ESource 12/7/2016)
  * Solar customers are nearly three times as likely to embrace utility-sponsored programs such as demand response or to order new products online in the past year (ESource 6/29/2016)

* Current options don’t meet evolving market demand, so new options are needed
  * Community Solar and other new options
  * Changes to existing options
How Does This Affect You?

* Information Technology plays a key role in successfully serving the existing and future market needs for distributed generation
  * Many LPCs thought a handful of customers would install solar or other forms of distributed generation
    * For some LPCs, that remains true—but today there are 3,000+ participants in Green Power Providers alone
    * That’s an average of 23 GPP projects per participating LPC
    * MLGW is approaching 100 customers across all options
  * Countless opportunities exist to automate and prepare before distributed generation affects a significant volume of customers
  * Managing by spreadsheet is not recommended!
Prepare for Changes and New Options

* GPP Participation Agreement lengths
  * Initially, 10-year term then raised to 20-year term
  * Early customers had opportunity to extend their 10-year agreements to total 20 years (not all chose to extend)
  * What internal measures does your organization have to monitor GPP agreement end dates and stop bill credits?

* Community Solar is another hot topic
  * Requires programming to handle subscription payments as well as utility bill credits for each subscriber’s share of generation
  * Options and prices could vary among multiple projects in same territory
  * How quickly can your utility handle this programming? Can you interface with Community Solar developers’ who have bolt-on billing tools? Do you have space on the bill? Can you support online enrollment?
Prepare for Declining Incentives

* Green Power Providers incentive applied as credit on monthly utility bill
  * As system costs declined, so have incentives (any premium is based on year Agreement was executed)
    * 2006: $0.15 per kWh (residential) or $0.20 per kWh (if demand-metered)
    * 2009: $0.12 premium per kWh + retail rate
    * 2013: $0.09 premium per kWh + retail rate *
    * 2014: $0.04 premium per kWh + retail rate
    * 2015: $0.02 premium per kWh + retail rate
    * 2016: retail rate only
    * 20XX: less than retail rate
  * How quickly can your organization implement one (or more) new GPP “rates”?

* TVA implemented option for third-party administrator option to issue check for the premium portion to reduce programming burden on LPCs
Prepare for Evolving Back Office Needs

* Create an Application for Interconnection
  * Initially, there was no MLGW-specific application, just the TVA GPP Participation Agreement
  * Now, MLGW has universal application (PDF) regardless of option chosen
* Create an Interconnection and Parallel Operation Agreement
  * None initially, then implemented a TVA template, which evolved to add insurance requirement and now MLGW has a universal agreement regardless of option chosen
  * Requires modification when participant is a government entity
  * Requires new agreement when customer-of-record changes
* Customers and installers prefer these documents be web forms, not PDFs to print, fill-out and return. How quickly can your utility offer this?

http://www.mlgw.com/about/greenpowerswitchdocs
Prepare for Ongoing Customer Account Maintenance

* Proactive programming can help avoid a lot of problems and customer frustration
  * Implement ways to identify solar generation customers (and, more specifically, the generation meters) easily
    * Customer Information System (CIS)
    * Other internal systems
  * Implement ways to identify changes in customer-of-record at solar generation sites
    * Create process to trigger necessary updates to documents and accounts in timely manner
  * Implement ways to identify potential issues with solar meter readings
    * Meter readings of zero
    * Irregularities in grid-supplied consumption

* Does your organization have established processes for handling adjustments, back billing and other needs when these issues are found?
Prepare for New Policies regarding Distributed Generation

* MLGW instituted policies in 2017
  * Unauthorized generation can result in disconnection of customer’s electric service
    * Established specific steps and timelines for unauthorized systems to be submitted, reviewed, reworked (if necessary) and approved
  * Potential to claw-back portion of construction incentives if a new or expanding commercial/industrial customer does not reveal plans for self-generation during planning stages
    * MLGW applies gross margin allowance based on submitted usage data; self-generation reduces that usage level

Prepare for New Policies to Avoid Cross-Subsidization

* MLGW instituted charges in 2017
  * Application fee
    * ~66% of approved applications never proceed to construction but required significant processing and engineering review time
    * Fee ensures commitment (follows optional TVA GPP fee structure, but no maximum)
      * Residential is $250 + $5 per kW
      * Non-residential is $500 + $5 per kW
    * Interconnection study fee ($50,000 deposit) applies for large projects
  * Monthly customer metering charge for options other than Green Power Providers
  * System Acceptance Test fee ($200 per attempt)

Prepare for Tomorrow...Today

* Cultivate on-staff “experts” who can research and explain options
  * Positions LPC as the “trusted energy advisor”
  * Gives solar installers a consistent point of contact
* Prepare for increased interest from customers and developers
  * Create or update utility processes to handle questions, project applications, requests for large-scale interconnection
  * Communicate with local Code Enforcement
  * Assign resources to write code for billing and ongoing account maintenance; application process automation; project tracking
  * Create policies, documents and fees because...
Here comes the sun!